

Systems

INTRODUCTION

Barnstead

MIX AND MATCH... WITH BARNSTEAD YOU HAVE A CHOICE

It is often necessary to use more than one form of water purification to produce the most desirable grade of ultrapure water at a reasonable cost.

Barnstead prides itself on providing the most complete line of water purification equipment. This section is intended to acquaint you with various system combinations which have proven successful through years of field use.

The flow schematics shown throughout this section indicate equipment orientation and possible accessories or pretreatment which may be desired to achieve optimum performance. It is strongly recommended that a free W.A.T.E.R. analysis be done prior to purchasing your equipment to ensure its proper selection. Call Customer Service at 1-800-553-0039 or 319-556-2241 to request a free W.A.T.E.R. kit.

Barnstead supplies the equipment only. However, in many areas of the U.S. and Canada, we can arrange equipment installation through our factory-trained field service representatives. Installation of distribution and other piping should be performed by a qualified plumbing contractor. On-site electrical installation work should be done by a qualified electrician.

Classic Still/Storage Tank



EASypure RO/Storage Tank/EASypure UV



FI-Stream III Glass Still/Storage Tank



ROpure Infinity/Infinity Tank/NANOpure Infinity

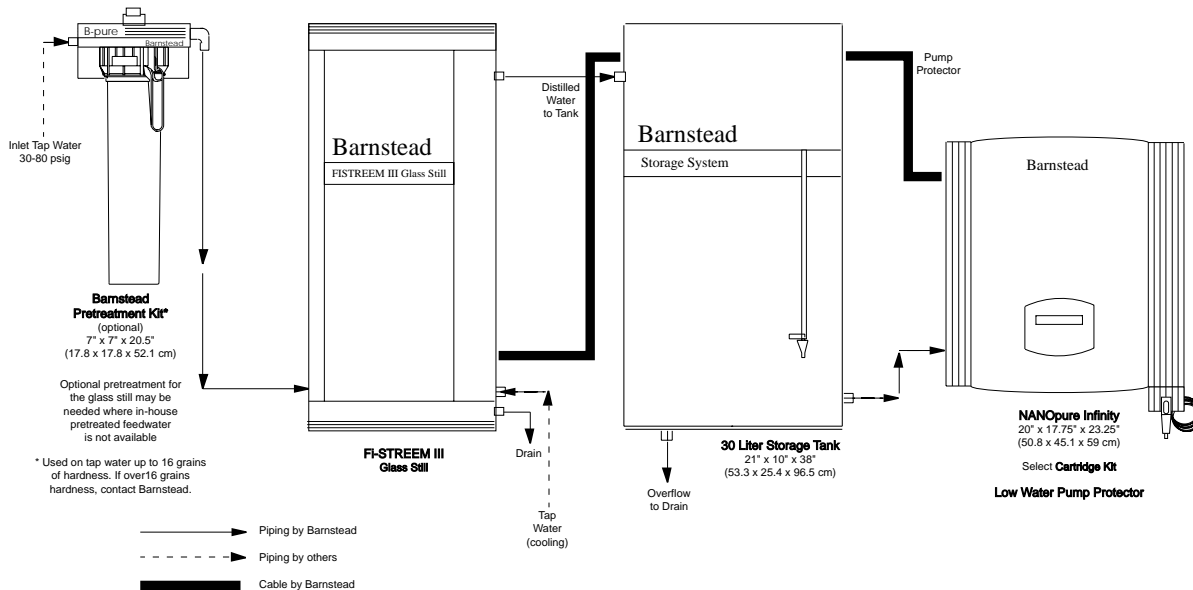


Systems

DISTILLATION/DEIONIZATION

Barnstead

FI-Stream III/30 Liter Tank/NANOpure Infinity



TYPE I ULTRAPURE WATER

(Recommended for ultrapure water requirements greater than 15 //day.)

- Fully automatic system
- Space saving design
- No manual cleaning

This system illustrates the use of FI-Stream III glass still distillation as pretreatment for a NANOpure Infinity deionization unit. The optional pretreatment kit for the FI-Stream III glass still may be recommended for use when in-house pretreated feed water is not available.

The FI-Stream III glass still provides you with fully automatic operation and when used in conjunction with the NANOpure Infinity provides the ultimate Type I Reagent grade water system. Not only is the still a useful source of water for your less demanding applications, it extends the life of the cartridges in the NANOpure Infinity by a factor of 10 versus tap water. The combination of the FI-Stream III and the NANOpure Infinity provides the purest water available at a very reasonable cost.

Listed to the right are the product water qualities that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

Water Qualities From Deionization System

- Type I Reagent Grade water.
- Ultra-low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra-low dissolved organics, less than 1 ppb TOC with UV.
- See NANOpure Infinity test results for more information.

Applications

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Cell Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

Water Qualities From Distillation System

- Sterile.
- Free from pyrogens (endotoxins) and bacteria.
- Free from particles.
- Very low dissolved ionized solids.
- Low dissolved organics.

Applications

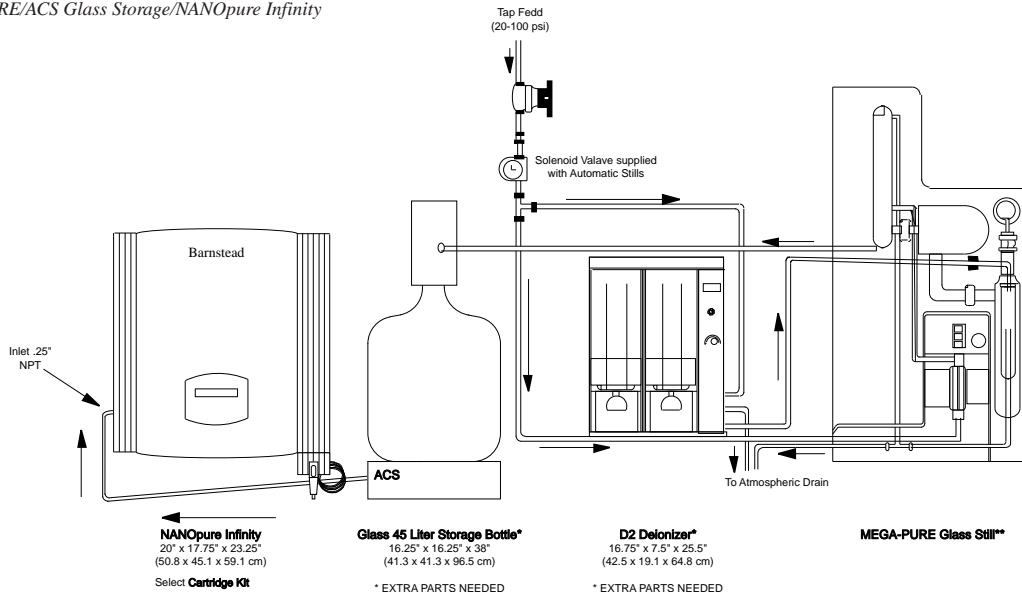
- General laboratory use.
- Qualitative analyses.
- Washing and rinsing of glassware and plasticware.
- Biological and endotoxin free use.
- Media preparation.

Systems

DISTILLATION/DEIONIZATION

Barnstead

MEGA-PURE/ACS Glass Storage/NANOpure Infinity



* Used on tap water up to 16 grains of hardness. If over 16 grains hardness, contact Barnstead Technical Service.

** When feeding ACS system, still must be on platform 12" higher than ACS.

*** When feeding NANOpure Infinity from ACS, additional adapters are required. Call Barnstead Technical Service for part numbers. Unlike other Barnstead storage systems, NANOpure Infinity will not shut off on low water level in ACS.

TYPE I ULTRAPURE WATER

(Recommended for ultrapure water requirements greater than 15 μ /day.)

- Economically priced
- Five production volume choices
- All glass pretreatment includes glass storage bottle

The use of MEGA-PURE glass distillation as pretreatment to a NANOpure Infinity deionization unit provides you with the best of both worlds. The MEGA-PURE provides you with a reliable source of water for your less demanding needs while the NANOpure Infinity provides you with the ultimate in purity for your most stringent requirements.

The MEGA-PURE produces between 1.4 and 13 liters of water per hour and when coupled with the 45 liter storage bottle provides a sufficient quantity to be used alone or as a feed source to the NANOpure Infinity system. The MEGA-PURE used as a feed source to the NANOpure Infinity will ensure the ultimate in purity as well as provide for increased cartridge capacity.

Listed to the right are the product water qualities that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra-low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra-low dissolved organics, less than 1 ppb TOC with UV.
- See NANOpure Infinity test results for more information.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM DISTILLATION SYSTEM

- Sterile.
- Free from pyrogens (endotoxins) and bacteria.
- Free from particles.
- Very low dissolved ionized solids.
- Low dissolved organics.

APPLICATIONS

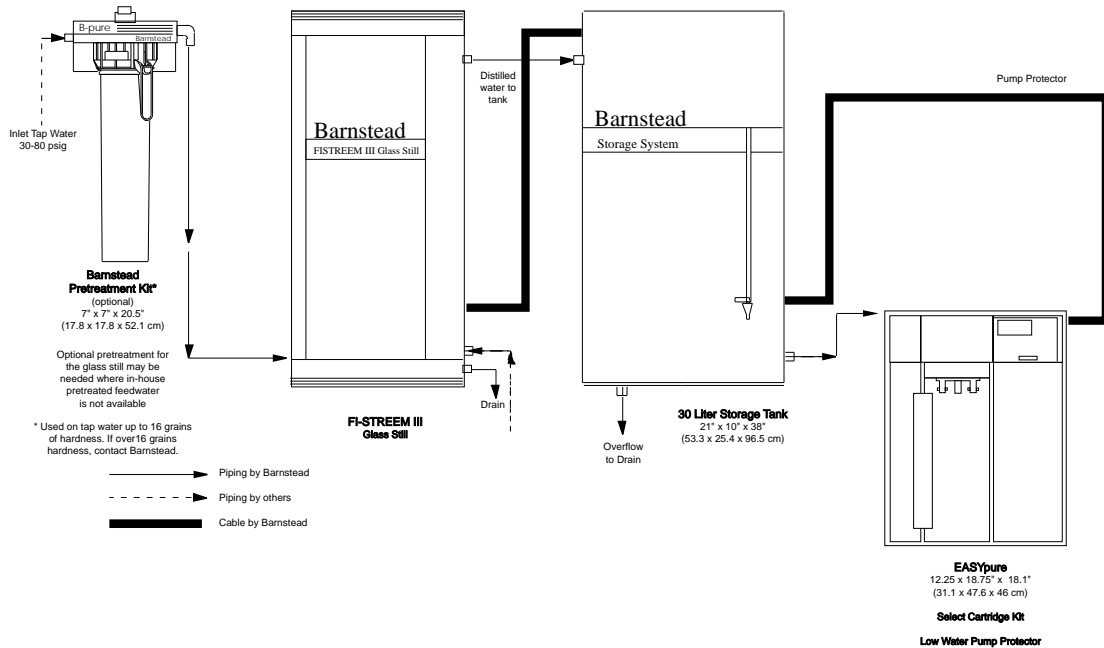
- General laboratory use.
- Qualitative analyses.
- Washing and rinsing of glassware and plasticware.
- Biological and endotoxin free use.
- Media preparation.

Systems

DISTILLATION/DEIONIZATION

Barnstead

FI-Stream III/30 Liter Tank/EASYpure



TYPE I ULTRAPURE WATER

(Recommended for ultrapure water requirements greater than 15 μ /day.)

- Fully automatic system
- Space saving design
- No manual cleaning

This system illustrates the use of FI-Stream III glass still distillation as pretreatment for an EASYpure deionization unit. The optional pretreatment kit for the FI-Stream III glass still may be recommended for use when in-house pretreated feed water is not available.

The FI-Stream III glass still provides you with fully automatic operation and when used in conjunction with the EASYpure, provides the ultimate Type I Reagent grade water system. Not only is the still a useful source of water for your less demanding applications, it extends the life of the cartridges in the EASYpure by a factor of 10 versus tap water. The combination of the FI-Stream III and the EASYpure provides the purest water available at a very reasonable cost.

Listed to the right are the product water qualities that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra low dissolved organics, less than 2 ppb TOC with UV.
- See EASYpure test results for more information.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM DISTILLATION SYSTEM

- Sterile.
- Free from pyrogens (endotoxins) and bacteria.
- Free from particles.
- Very low dissolved ionized solids.
- Low dissolved organics.

APPLICATIONS

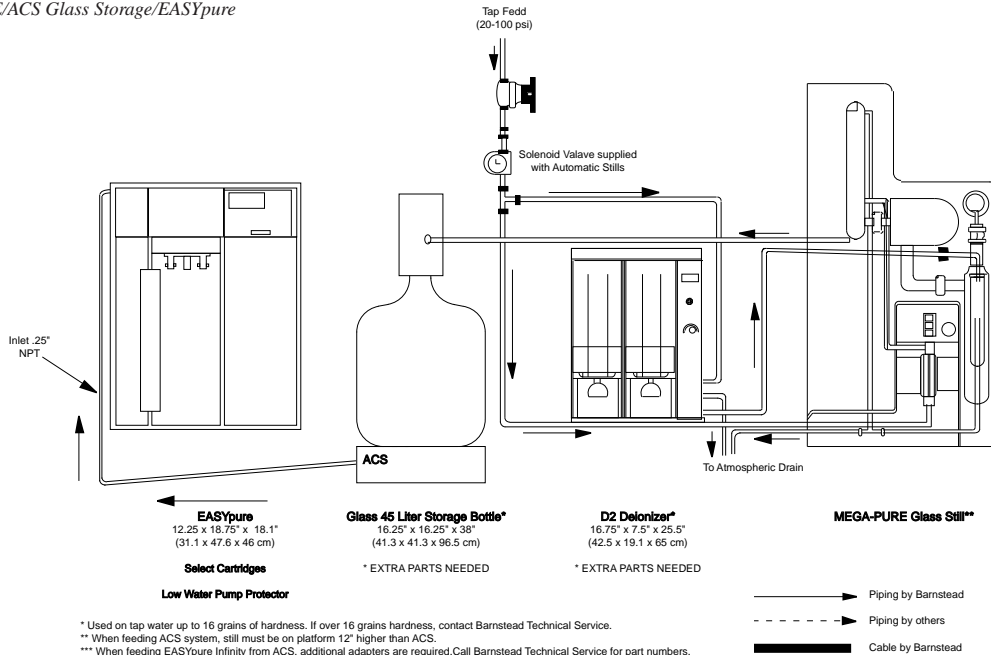
- General laboratory use.
- Qualitative analyses.
- Washing and rinsing of glassware and plasticware.
- Biological and endotoxin free use.
- Media preparation.

Systems

DISTILLATION/DEIONIZATION

Barnstead

MEGA-PURE/ACS Glass Storage/EASYpure



TYPE I ULTRAPURE WATER

(Recommended for ultrapure water requirements greater than 15 //day.)

- Economically priced
- Five production volume choices
- All glass pretreatment includes glass storage bottle

The use of MEGA-PURE glass distillation as pretreatment to a EASYpure deionization unit provides you with the best of both worlds. The MEGA-PURE provides you with a reliable source of water for your less demanding needs while the EASYpure provides you with the ultimate in purity for your most stringent requirements.

The MEGA-PURE produces between 1.4 and 13 liters of water per hour and when coupled with the 45 liter storage bottle provides a sufficient quantity to be used alone or as a feed source to the EASYpure system. The MEGA-PURE used as a feed source to the EASYpure will ensure the ultimate in purity as well as provide for increased cartridge capacity.

Listed to the right are the product water qualities that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra low dissolved organics, less than 2 ppb TOC with UV.
- See EASYpure test results for more information.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM DISTILLATION SYSTEM

- Sterile.
- Free from pyrogens (endotoxins) and bacteria.
- Free from particles.
- Very low dissolved ionized solids.
- Low dissolved organics.

APPLICATIONS

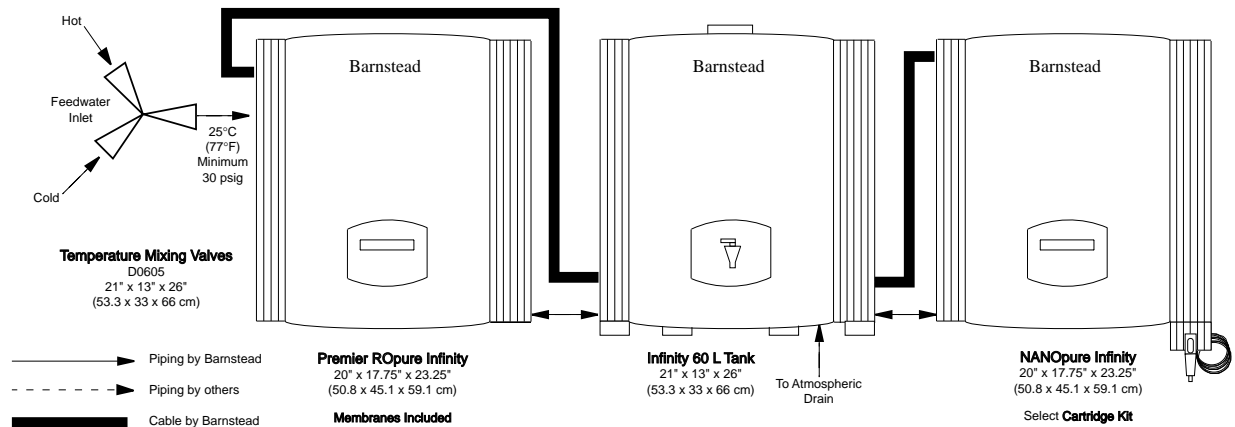
- General laboratory use.
- Qualitative analyses.
- Washing and rinsing of glassware and plasticware
- Biological and endotoxin free use.
- Media preparation.

Systems

REVERSE OSMOSIS/DEIONIZATION

Barnstead

Premier ROpure Infinity/60 Liter Infinity Tank/NANOpure Infinity



TYPE I ULTRAPURE WATER

(For RO water requirements up to 600 //day and ultrapure water requirements greater than 15 //day.)

- Fully automatic system

This system illustrates the use of the ROpure Infinity reverse osmosis system with 60 L reservoir as pretreatment for a NANOpure Infinity deionization unit. This combination provides you with a cost effective method of producing water meeting your most demanding requirements.

The use of a ROpure Infinity reverse osmosis system provides a fully automatic operation providing you with up to 600 liters per day of Type I water when used with NANOpure Infinity. The ROpure Infinity will automatically turn on when the tank water level is reduced and will turn off when the tank is full.

Listed to the right are product water specifications that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra low dissolved organics, less than 1 ppb TOC with UV.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM REVERSE OSMOSIS SYSTEM

- 85-95% reduction of inorganic solids.
- 99% reduction of 300 molecular weight or larger organic solids.
- > 99% reduction of particles, bacteria and pyrogens.

APPLICATIONS

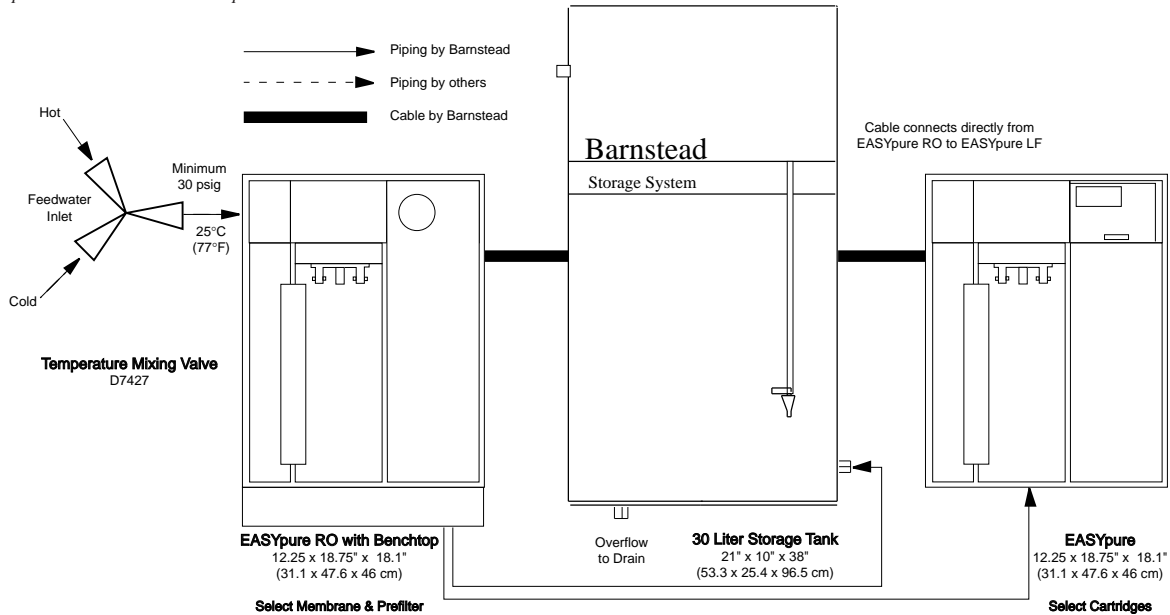
- Pretreated water for feeding deionization systems, extending deionization cartridge life.
- Purified water for general laboratory uses including glassware and plasticware washing.

Systems

REVERSE OSMOSIS/DEIONIZATION

Barnstead

EASYPure RO/30 Liter Tank/EASYPure



TYPE I ULTRAPURE WATER

(For RO water requirements less than 100 #/day.)

- Fully automatic system
- Space saving design
- Low operating cost

This system illustrates the use of the EASYPure RO reverse osmosis system as pretreatment for an EASYPure deionization unit. When you require small quantities of very pure water, this system is unique in the industry.

The use of an EASYPure reverse osmosis system provides a fully automatic operation, supplying you with Type I water when you need it when used with an EASYPure deionization unit. The EASYPure RO will automatically turn on when the tank water level is reduced and will turn off when the tank is full. This system with its space saving design is ideal for lower volume pure water requirements.

Listed to the right are product water specifications that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra low dissolved organics, less than 10 ppb TOC or 2 ppb TOC with UV.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM REVERSE OSMOSIS SYSTEM

- 85-95% reduction of inorganic solids.
- 99% reduction of 300 molecular weight or larger organic solids.
- > 99% reduction of particles, bacteria and pyrogens.

APPLICATIONS

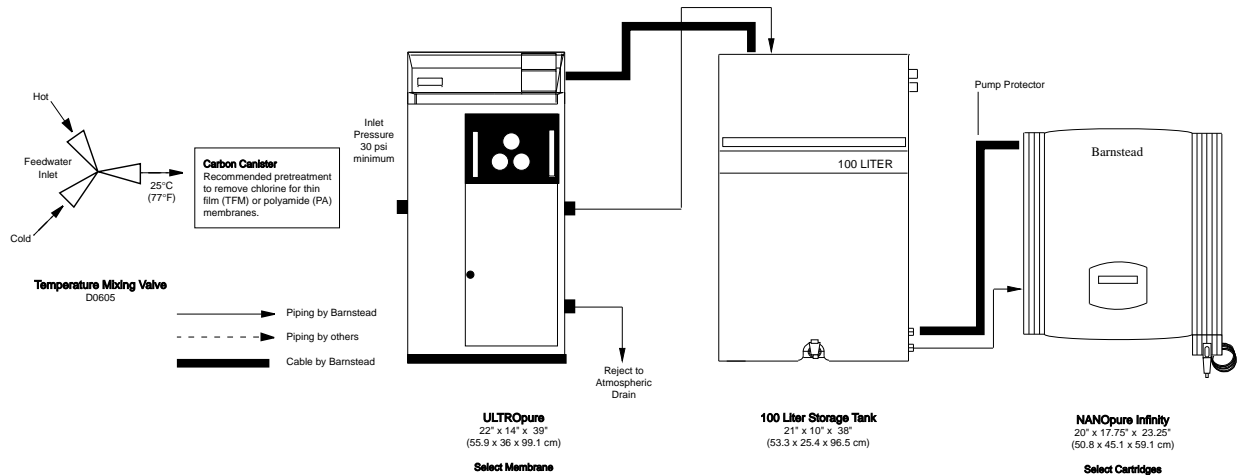
- Pretreated water for feeding deionization systems, extending deionization cartridge life.
- Purified water for general laboratory uses including glassware and plasticware washing.

Systems

REVERSE OSMOSIS/DEIONIZATION

Barnstead

ULTROpure/100 Liter Tank/NANOpure Infinity



TYPE I ULTRAPURE WATER

(For RO water requirements up to 1325 //day and ultrapure water requirements greater than 15 //day.)

- Fully automatic system

This system illustrates the use of the ULTROpure reverse osmosis system as pretreatment for a NANOpure Infinity deionization unit. The ULTROpure in conjunction with the NANOpure Infinity provides water of the exacting quality you require at a rate that meets your high volume requirements.

The use of an ULTROpure reverse osmosis system provides fully automatic operation, supplying you with Type I water when used with a NANOpure Infinity. The ULTROpure will automatically turn on when the tank water level is reduced and will turn off when the tank is full.

The NANOpure Infinity will provide up to 1.5 liters/minute, of Type I water for your lab. Listed to the right are product water specifications that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra low dissolved organics, less than 1 ppb TOC with UV.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM REVERSE OSMOSIS SYSTEM

- 90-95% reduction of inorganic solids.
- 99% reduction of 300 molecular weight or larger organic solids.
- > 99% reduction of particles, bacteria and pyrogens.

APPLICATIONS

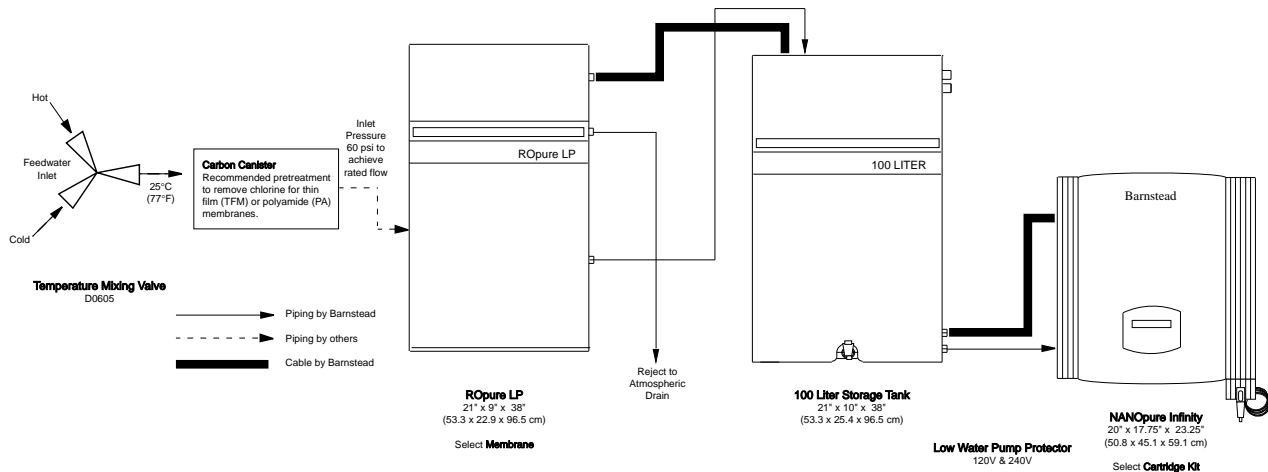
- Pretreated water for feeding deionization systems, extending deionization cartridge life.
- Purified water for general laboratory uses including glassware and plasticware washing.

Systems

REVERSE OSMOSIS/DEIONIZATION

Barnstead

ROpure/100 Liter Tank/NANOpure Infinity



TYPE I ULTRAPURE WATER

(For RO water requirements up to 300 //day and ultrapure water requirements greater than 15 //day.)

- Fully automatic system
- Low operating cost

This system illustrates the use of the ROpure LP reverse osmosis system as pretreatment for a NANOpure Infinity deionization unit. Together the systems provide cost effective reagent grade water of unparalleled quality.

The use of a ROpure LP reverse osmosis system provides a fully automatic operation supplying you up to 300 liters per day of Type I water, when used with a NANOpure Infinity. The ROpure LP will automatically turn on when the tank water level is reduced and will turn off when the tank is full.

The NANOpure Infinity will provide up to 1.5 liters/minute of Type I water for your lab. Listed to the right are product water specifications that could be expected from this type of system.

The Free W.A.T.E.R. Water Analysis To Evaluate and Recommend program assures that you are purchasing the correct system for your application, volume requirements and budget. See the W.A.T.E.R. test kit page for more information.

WATER QUALITIES FROM DEIONIZATION SYSTEM

- Type I Reagent Grade water.
- Ultra low dissolved inorganic solids and gases, ASTM Type I up to 18.3 megohm-cm resistivity.
- Ultra low dissolved organics, less than 1 ppb TOC with UV.

APPLICATIONS

- HPLC.
- GC/MS.
- Cell & Tissue Culture.
- Media Preparation.
- ICP/MS.
- AA.
- IC.
- TOC.
- GC.
- DNA Amplification.

WATER QUALITIES FROM REVERSE OSMOSIS SYSTEM

- 85-95% reduction of inorganic solids.
- 99% reduction of 300 molecular weight or larger organic solids.
- > 99% reduction of particles, bacteria and pyrogens.

APPLICATIONS

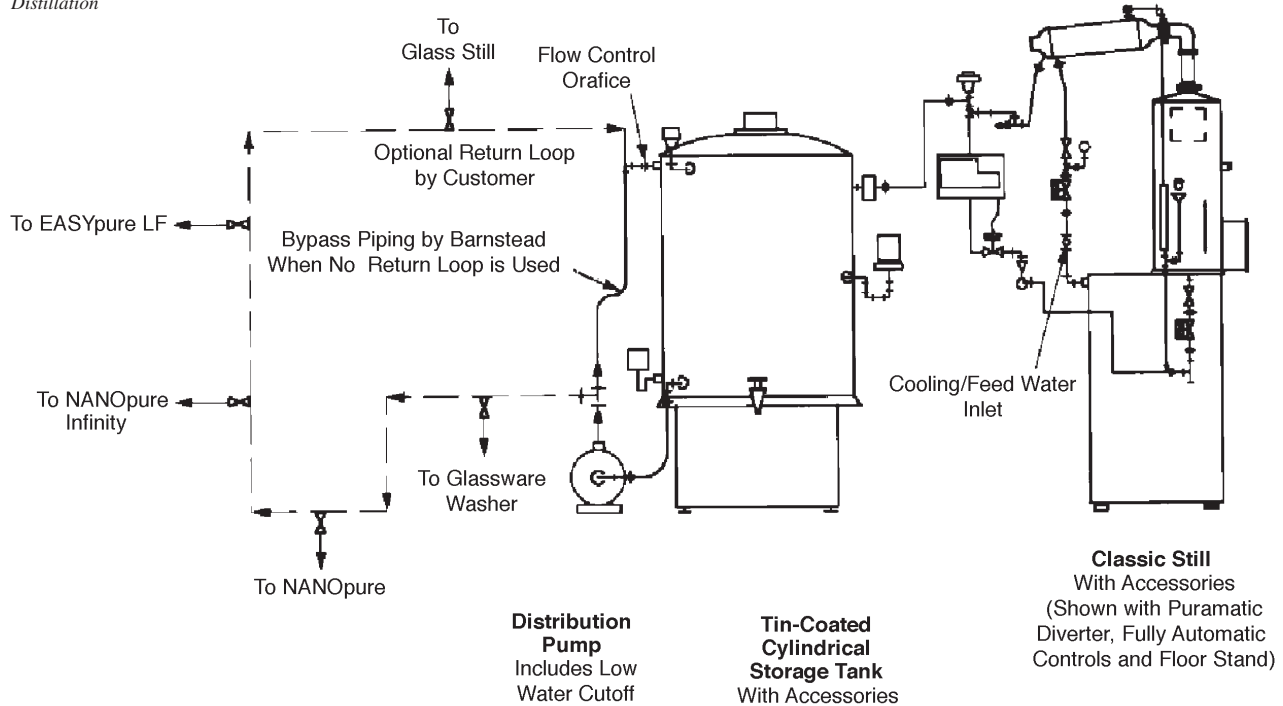
- Pretreated water for feeding deionization systems, extending deionization cartridge life.
- Purified water for general laboratory uses including glassware and plasticware washing.

Systems

DISTILLATION CENTRAL SYSTEM

Barnstead

Distillation



CENTRAL SYSTEMS

The current role of the central pure water system in the research laboratory is to provide a system which is pure enough to a) be acceptable for general, higher volume laboratory use, such as glassware washing and b) provide fairly low levels of ionized and other impurities so that point-of-use equipment can be operated with optimal maintenance and cost per liter for critical, reagent grade water applications.

Reverse osmosis and distillation both significantly reduce ionized impurities as well as organics, bacteria, pyrogens and particulate matter. Distillation generally provides higher resistivity (with a nominal effluent of less than 1 ppm total dissolved solids) than reverse osmosis (about 90% removal of ionizables), but also has higher operating costs due to higher energy input. Pretreatment considerations may also be an important consideration in equipment selection.

PRODUCT SPECIFICATIONS

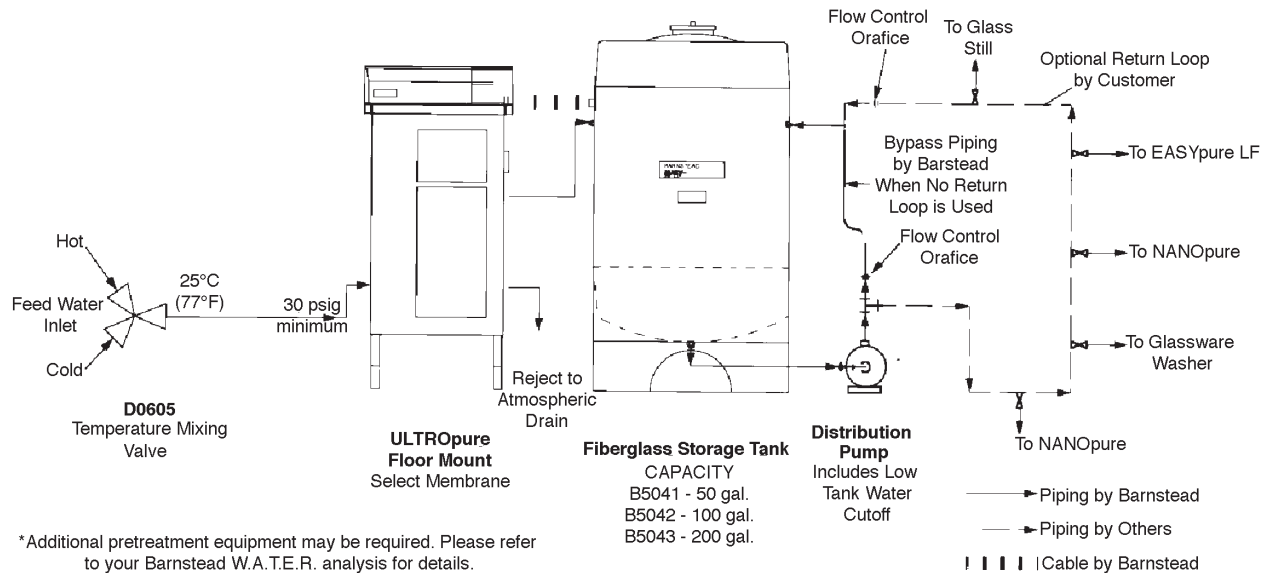
Model #	Flow Control	Type
Classic Stills		
A1011	(1 gph)	Electric
A1013	(2 gph)	Electric
A1015	(5 gph)	Electric
A1016	(10 gph)	Electric
A1212	(5 gph)	Steam
A1213	(10 gph)	Steam
Cylindrical Tank		
		Capacity
B3043	(10 gal.)	
B3045	(25 gal.)	
B3046	(50 gal.)	
B3047	(100 gal.)	
B3049	(200 gal.)	
Rectangular Tank		
		Capacity
B3027	(25 gal.)	
B3028	(50 gal.)	

Systems

REVERSE OSMOSIS CENTRAL SYSTEM

Barnstead

Reverse Osmosis



CENTRAL SYSTEM CONSIDERATIONS

A few considerations in cost/benefit analysis when designing a central pure water system: the distribution pump should be properly sized for elevation change, frictional losses and the maximum instantaneous flow rate required at any one time; velocity through the piping should be about 4-7 feet/second and piping should be designed so that water stagnation areas, or deadlegs, are avoided. A deadleg occurs when water is stagnate in a pipe length equal to six times its diameter (for a 1" diameter pipe, this is 6" pipe length). A return loop to the storage tank should be installed wherever possible. The best commonly available piping materials are 316 (or 316 L) grade stainless steel or a homopolymer plastic, such as polypropylene or polyvinylidene fluoride (PVDF). PVC, however, may be adequate for some applications.

Water quality degradation will occur to some extent in all central water purification systems. Even the best piping materials will leach out trace organics or metals because of the large amount of contact area within the distribution system, which may provide unacceptable results to most critical work.

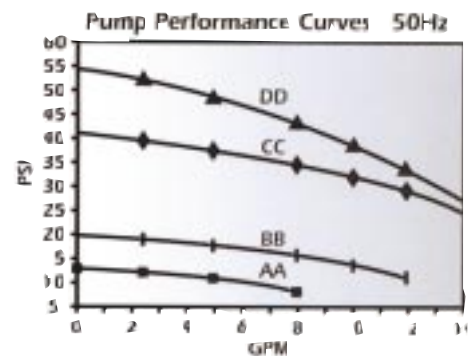
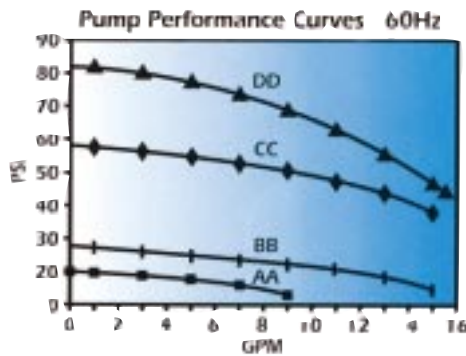
Barnstead's selection of distillation and deionization point-of-use equipment is designed to provide you the best possible water at the point-of-use to meet or exceed the requirements of your most critical applications.

Barnstead supplies the equipment only. However, in many areas of the U.S. and Canada, we can arrange equipment installation through our factory-trained field service representatives. Installation of distribution and other piping should be performed by a qualified plumbing contractor. On-site electrical installation work should be done by a qualified electrician.

Systems

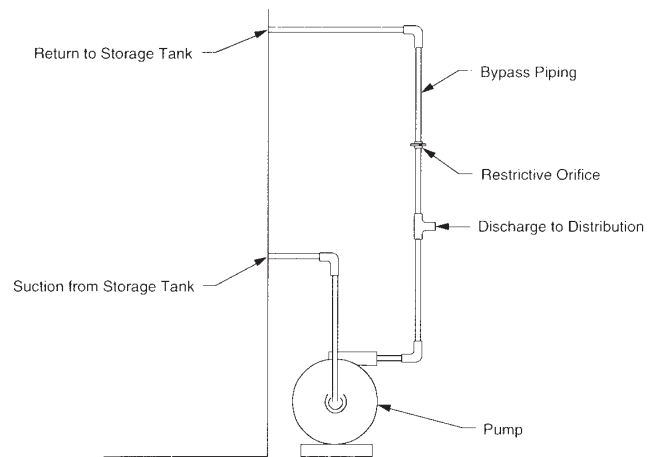
DISTRIBUTION PUMPS

Barnstead



PRODUCT DESCRIPTION

- Barnstead's distribution pumps are used with purified water storage tanks when it is necessary to keep the pure water under pressure for delivery to locations above tank level or at greater than gravity flow pressure.
- 4 sizes.
- Includes pump bypass (block tin, PVC) with restrictive orifice for tank.
- Includes low-level cutoff switch to shut pump off on storage tank low water conditions.
- All wetted parts are 316 stainless steel.
- Mechanical rotary shaft seal is John Crane Type 21 Viton/carbon/ceramic with teflon gasket and Viton O-ring.
- Heavy duty, totally enclosed, split-phase induction motor.
- Motor starters not included; all external wiring by customer.
- Bypass piping is precut to fit on tin-lined tanks only.



NOTE: Pump low-level cut-off switch not shown

ORDERING INFORMATION

Assembly Model No. ¹	Description	Model #	US List Price	Model #	US List Price	Model #	US List Price	Model #	US List Price
	Tin Bypass	H1110	\$2464.00	H1120	\$2464.00	H1130	\$3086.00	H1140	\$3532.00
	Plastic Bypass	H1112	\$1606.00	H1122	\$2301.00	H1132	\$2899.00	H1142	\$3394.00
Pump Size		AA		BB		CC		DD	
Pump Part No.		01398		01429		01430		01431	
Pump Suction (NPT)		1/2"		3/4"		3/4"		3/4"	
Pump Discharge (NPT)		1/4"		1/2"		1/2"		1/2"	
Distribution Outlet (NPT)		1/2"		3/4"		3/4"		3/4"	
Bypass Return (NPT)		1/4"		1/4"		1/4"		1/4"	
Pump Motor	HP	1/3 HP		1/2 HP		1 HP		1 1/2 HP	
	Speed (rpm)	3450		3450		3450		3450	
	VAC	115/230		115/230		115/230		230/460	
	Frequency (Hz)	50/60		50/60		50/60		50/60	
	Phase	1		1		1		3	

¹Pump starters are not provided with units.